

# PATENT SPECIFICATION

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## (54) IMPROVEMENTS IN OR RELATING TO APPARATUS FOR INSERTION INTO A BODY CAVITY

(71) I LOUIS ROGER CELESTIN, a British subject, of 8 Church Avenue, Stoke Bishop, Bristol BS9 1LD do hereby declare the invention, for which I pray that a

5 patent may be granted to me and the method by which it is to be performed, to be particularly described in and by the following statement:

The invention relates to an apparatus 10 for insertion into a body cavity.

According to the invention, there is provided an apparatus for insertion into a body cavity, the apparatus comprising an elongate carrier having at or near one end 15 thereof an element which can be selectively brought into and out of an expanded condition, the carrier having visible markings in the form of a scale to facilitate correct positioning.

20 The invention also provides an apparatus for insertion into a body cavity, the apparatus comprising an elongate tube, a balloon at or near one end of the tube, and means within said tube for conveying 25 fluid pressure to the balloon interior from a position on the tube remote from the one end, whereby the balloon can be expanded to an expanded condition, the apparatus having visible markings in the form of a 30 scale to facilitate correct positioning.

An apparatus embodying the invention can be used for placing an object, for example an intubation device, in a body cavity, or for withdrawing an object therefrom. The balloon or other expansible element may for this purpose have an outer surface shaped to ensure secure engagement with the object when in the expanded condition. An apparatus embodying the 35 invention can also be used for withdrawing samples from the body cavity, the balloon or expansible element then having the same or a different shape and being provided with brush or like means on its outer 40 surface. The balloon can be expanded in

the site to be sampled to bring the brush into contact with the adjacent tissue to collect sample cells therefrom, after which it is withdrawn in the non-expanded condition, with the collected cells retained by 50 the brush.

The balloon or the like of the apparatus of the invention can be resiliently walled to expand under fluid, for example water pressure, to the expanded condition. The 55 tube can contain or constitute means for supplying and releasing the fluid pressure. If the tube or carrier is not itself rigid, a mandrel can be placed within it during insertion to provide necessary rigidity. A 60 fiberoptic endoscope can be employed as a mandrel to allow observation of the positioning of the apparatus.

The invention is further explained below, by way of illustration, with reference 65 to the accompanying schematic drawing, in which:

Figure 1 is a sectional side view of an apparatus embodying the invention; and

Figure 2 is a sectional side view of a 70 modified form of the apparatus within an intubation device.

The apparatus illustrated in Figure 1 comprises a carrier in the form of an elongate tube 1 and an expansible element or 75 balloon 2 mounted on the tube towards one end thereof, which is the insertion end in use. The balloon 2 surrounds the tube 1 so as to have an annular interior extending around the tube. The balloon is made of 80 elastically extensible material for example rubber or latex plastics material so that it can be expanded by increase of fluid pressure in its interior from the collapsed or deflated position indicated by reference 85 numeral 2' and shown in broken line, to the inflated or expanded position shown in solid line, in which it has a generally spherical shape.

The interior of the balloon 2 can be 90

# WHAT I CLAIM IS:

1. An apparatus for insertion into a body cavity, the apparatus comprising an elongate carrier having at or near one end thereof an element which can be selectively brought into and out of an expanded condition, the carrier having visible markings in the form of a scale to facilitate correct positioning.
2. An apparatus as claimed in claim 1 wherein the carrier comprises a tube and the element comprises an expansible balloon around the tube.
3. An apparatus for insertion into a body cavity, the apparatus comprising an elongate tube, a balloon at or near one end of the tube, and means within said tube for conveying fluid pressure to the balloon interior from a position on the tube remote from the one end, whereby the balloon can be expanded to an expanded condition, the apparatus having visible markings in the form of a scale to facilitate correct positioning.
4. An apparatus as claimed in claim 2 or 3 wherein the balloon outer surface carries brush means arranged to collect cells from body tissue constituting the adjacent surface.
5. An apparatus as claimed in claim 4 wherein the brush means has the form of a strip extending circumferentially around the balloon.
6. An apparatus as claimed in any one of claims 2 to 5 wherein the balloon is generally spherical in shape in the expanded condition.
7. An apparatus as claimed in any one of claims 2 to 5 wherein the balloon has a generally cylindrical shape in the expanded condition.
8. An apparatus as claimed in any one of claims 2 to 7 wherein the tube is flexible and arranged to receive a mandrel therein to facilitate positioning the balloon within a body cavity.
9. An apparatus as claimed in any one of claims 2 to 8 wherein a fluid pressure supply duct extends within the tube between first and second apertures in the tube wall, the apertures communicating the duct interior with the balloon interior and with a fluid pressure source respectively.
10. An apparatus as claimed in any one of claims 2 to 9 wherein the balloon is of resilient material.
11. An apparatus as claimed in any preceding claim wherein the scale is a centimetre scale.
12. An apparatus as claimed in any preceding claim having radio-opaque markings on the carrier.
13. An apparatus as claimed in claim 12 wherein the radio-opaque markings are visible.
14. An apparatus for insertion into a body cavity substantially as herein described with reference to Figure 1 or Figure 2 of the accompanying drawing.

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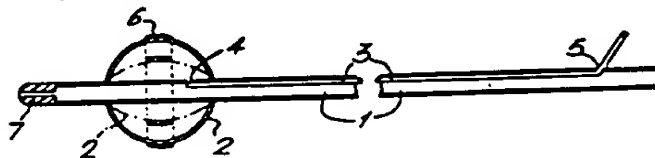
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CELE/ ★ P31 P34 F2252B/24 ★ GB 1547-328  
 Body cavity insertion device - has elongated carrier carrying balloon  
 and bearing visible markings to facilitate positioning  
 CELESTIN L R 15.09.77-GB-038596  
 (13.06.79) A61b-10 A61m-25

Device comprises an elongated carrier (1) pref. a tube  
 carrying, at or near one end, an expandable element (2),  
 pref. a ball-  
 oon. The car-  
 rier has a  
 scale to facili-  
 -tate correct  
 positioning



of the device in the body cavity.

The device is usable for placing an object e. g. an in-  
 tubation device 8 into a cavity or for withdrawing an ob-  
 ject. Opt. the device also bears radio:opaque line(s).  
 Pref. the lines are also visible. Pref. the scale has  
 a centimetre divisions. The balloon can support a brush  
 for collecting cells from body tissue. 19.1.78 (4pp1334)

